May 14, 1946. J. W. GRODIN 2,400,197

PACKAGING DEVICE

Filed Oct. 11, 1944

FIG. 1

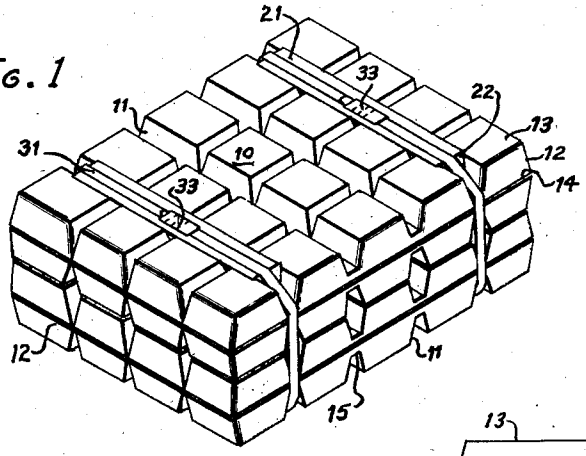
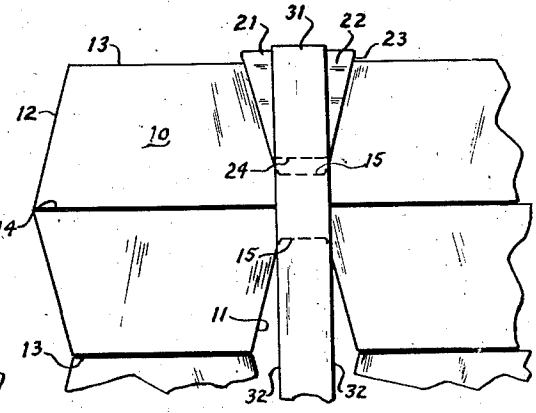


FIG. 2



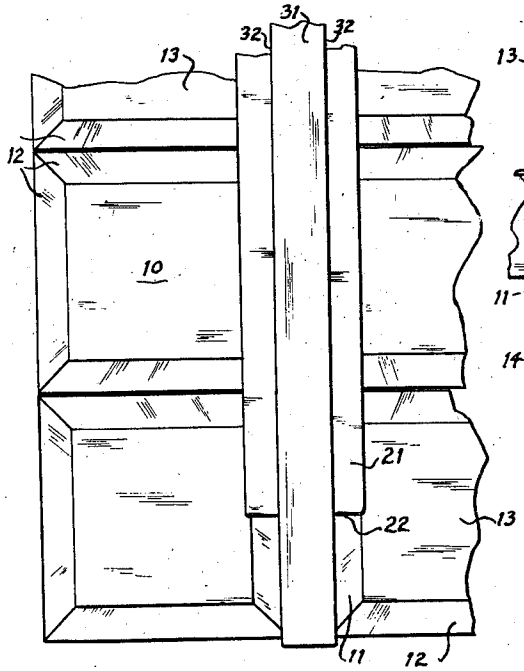


FIG. 3

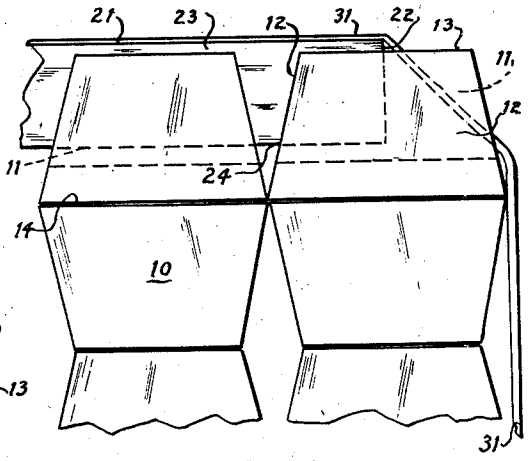


FIG. 4

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PACKAGING DEVICE

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3 Claims. (Cl. 206—65)

This invention relates to packaging devices and particularly to apparatus used for binding together several metal ingots for convenient handling and transporting.

Conducive to a clearer understanding of this invention, it may be well to point out that nonferrous raw metal ingots are often cast in sectional molds. Furthermore, when it is remembered that each of such ingots weighs approximately ten pounds, a small package of only about sixteen of them presents a problem for the economical and convenient packaging and handling of them. The ordinary cardboard container is not strong enough to retain such heavy concentrated weight, and suitable wooden or metal boxes are expensive. It is also highly desirable to conserve shipping space and reduce the weight of such shipments as much as possible.

Large numbers of packaged ingots must often be stacked one on top of another and for commercial reasons it is desirable not to have the respective ingots marred or scratched during such handling, since many of them have trade-marks or other indicia engraved, embossed or molded directly in them.

It is therefore the primary object of this invention to provide a means for binding together several ingots and forming thereby a convenient package which will remain firm and solid during transportation and which will present a neat, clean appearance when delivered.

Another object of this invention is to provide a device of the type mentioned which will enable several such packages to be stacked or laid one on top of the other without the faces or planar surfaces of the ingots themselves actually contacting each other or the floor on which they rest.

Still another object of this invention is to construct such packaging device substantially out of materials which are the same as the ingots themselves and which may be used by the recipient without waste.

These and other objects of the invention will become apparent from a reading of the following description and claims, together with the accompanying drawing, in which like parts are referred to and indicated by like reference characters and wherein:

Figure 1 is an isometric view of a package of ingots bound together in accordance with the instant invention;

Figure 2 is a side view of an upper corner portion of a package of ingots;

Figure 3 is a plan view of a corner portion of a package; and

Figure 4 is an end view of an upper corner portion of a package of such ingots.

The instant invention consists of two main elements; a plug member and a band member, each of which will be described in detail hereinafter. However, in order to fully understand the application of these combined members, the general size and shape of the ingots primarily intended to be bound or contained by this packaging means should be understood.

Each ingot, broadly indicated by the reference character **10**, is divided into and consists of five sections, each of which is connected together at its bottom portion by a frangible part **15** which may easily be broken or severed. Each section weighs a little over two pounds and has a top surface **13** and a bottom surface **14**. Inclined side walls **12** extend between the top and bottom surfaces, and the facing inclined walls **12** of each of the ingots adjacent to the frangible part **15** form what are referred to and indicated herein as notches **11**.

When several of the ingots are laid side by side and the notches **11** are aligned laterally as shown in the drawing, they form what is referred to herein as lateral channels. When two or more layers of such ingots are evenly laid side by side and back to back, the channels are parallel and neatly aligned and have a uniform width, depth and cross section.

The plug members are relatively long pieces of solid metal and are made of the same kind of metal as the ingots themselves. They have wide planar surfaces **21** which lie slightly above the face or top planar surfaces **13** of the ingot sections. The inclined outer side walls **23** thereof are formed to evenly face the inclined side walls **12** of the aligned notches **11** or channels and their narrow surfaces **24** are parallel with the top planar surfaces **21**. The plug members therefore are trapezoidal in cross section and are made so that the narrow surfaces **24** thereof will be spaced a short distance from the frangible parts **15** of the ingots. The length of each of the plug members is slightly shorter than the length of the channel with which it is to be engaged. As mentioned heretofore, the plug members are preferably cast of the same metal as the ingots which they are intended to help bind. However, wooden plugs have been used satisfactorily.

The band members heretofore referred to are simply flexible metal ribbons **31** which fit around a stack of ingots and engage the wide surfaces

21 of opposed plug members, as shown in the Figure 1. These band members 31 are fastened together by means of clips 33 and in a manner that is well known in the art. The band members 31 pass over the ends 22 of the plug members and through the notches 11, and since the plug members are shorter than their respective channels, the two parallel side edges 32 thereof fit tightly in and firmly engage the corners formed by the facing walls and the adjacent side walls thereat. This feature is clearly shown in the Figures 1 and 4.

In preparing a package of this type, metal strips or ribbons which form the bands 31 are laid parallel on a table. Two plug members are then placed longitudinally on the strips with their wide surfaces downward and in contact therewith. Four ingots are then placed downward or in an inverted position over the metal ribbons and are positioned to engage the plug members. Additional layers of aligned ingots are then placed back to back or face to face on the bottom layer of inverted ingots as shown. The top layer of ingots is placed on the stack face upward and a second set of plug members are then placed with their wide planar surface 21 facing upward in the channels immediately above the first inverted and opposed plug members. Finally, the two ends of the metal ribbons are brought together and are tightly and securely fastened together with the metal clips 33.

Having thus disclosed the invention in its preferred form, it should be understood that the illustrations and description thereof are to be regarded as being suggestive only as there may be other forms, modifications or uses thereof which may also be considered to come within the broad scope of the appended definitions of the invention and in which:

I claim:

1. A packaging device for a plurality of notched ingots of the type forming parallel lateral channels when aligned side by side and back to back, comprising in combination, an inverted plug member engaging a channel formed by the aligned notches in a layer of inverted ingots, an upright plug member engaging a channel formed by the aligned notches in a layer of upright ingots, the said inverted and upright plug members being parallel to each other and having planar surfaces below and above the respective ingots engaged, the said plug members being shorter than the respective channels engaged thereby, and a band member engaging the notches of the aforesaid ingots and the said planar surfaces of parallel plug members in a manner whereby several ingots and plug members may be firmly bound together.

2. A packaging device for notched ingots of the type that form parallel upright and inverted lateral channels when the ingots are aligned side by side and stacked back to back, comprising in combination, a first pair of plug members engaging the channels of stacked ingots, a second pair of plug members engaging the channels of stacked ingots, all of the plug members being shorter than the respective channels engaged thereby, the plug members of each said pair engaging the upright channels having top planar surfaces normally above the upper surfaces of the aligned ingots and the plug members of each said pair engaging the inverted channels having bottom planar surfaces normally below the lower surfaces of the aligned ingots, and a band member engaging each pair of plug members and fitting into the notches of the outer aligned and stacked ingots.

3. A device of the type defined in claim 2 and further characterized by the plug members being trapezoidal in cross section.

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